

OPERATING SUMMARY

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GEORGETOWN

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Ministry of the  
Environment

135 St. Clair Avenue West  
Toronto 195, Ontario

We are pleased to present you with the 1972 operating summary for the water pollution control plant serving your community.

This summary contains data on the performance of the plant as well as relevant financial information. Of particular interest is the review of the year's activities in which significant items of these data are discussed in some detail by the operations engineer and his staff who, by their day-to-day involvement with the operation, are thoroughly familiar with the plant.

We appreciate your continuing interest in protecting the environment through the efficient operation of this wastewater treatment facility.

D.S. Caverly,  
Assistant Deputy Minister.

D.A. McTavish, P. Eng.,  
Director,  
Project Operations Branch.



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GEORGETOWN  
WATER POLLUTION CONTROL PLANT

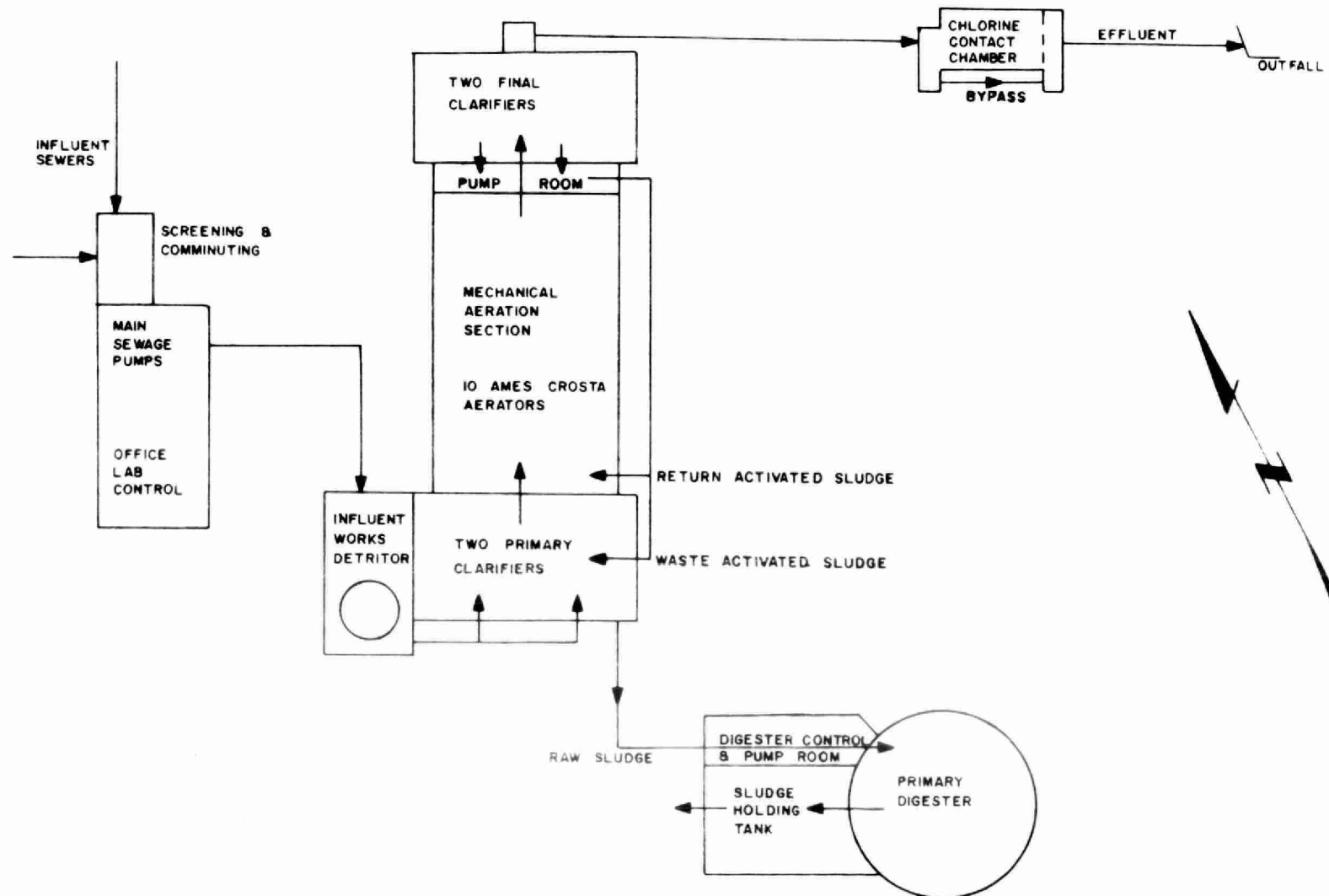
operated for  
THE TOWN OF GEORGETOWN  
by the  
MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

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# GEORGETOWN WPCP FLOW DIAGRAM



# DESIGN DATA

PROJECT NO. 2-0017-58

TREATMENT Activated Sludge

DESIGN FLOW 1.50 mgd

DESIGN POPULATION 15,000

BOD - Raw Sewage 200 mg/l  
- Removal 95%

SS - Raw Sewage 200 mg/l  
- Removal 95%

## PRIMARY TREATMENT

### Screening

Type: Manually cleaned bar screen  
Size: 3/4" spacing

### Comminution

Type: C. P. Barminutor  
Size: One Model C (24")

### Sewage Lift Pumps

Type: Chicago Pump  
Size: Two 2,900 gpm @ 60' tdh

### Grit Removal

Type: Dorr Type WA Detritor  
Size: One 12' x 12' x 1' 3" (1,120 gal)  
Retention: 1.1 min

## Primary Sedimentation

Type: Dorr Type A  
Size: Two 35' x 35' x 10' swd  
(24,500 cu ft or 153,000 gal)  
Retention: 2.5 hours  
Loading: Surface, 612 gal/ft<sup>2</sup>/day  
Weir, 5,360 gal/ft/day

## SECONDARY TREATMENT

### Aeration Tanks

Type: Mechanical aeration; single-pass  
Size: Two 112' x 28' x 13.25' (79,400  
cu ft or 0.495 mil gal)  
Retention: 7.9 hours

### Aerators

- Eight Ames-Crosta

### Secondary Sedimentation

Type: Dorr Type AZ  
Size: Two 40' x 40' x 10' swd (32,000  
cu ft or 200,000 gal)  
Retention: 3.2 hours  
Loading: Surface, 470 gal/ft<sup>2</sup>/day  
Weir, 4,700 gal/ft/day

## CHLORINATION

- One W & T 200 lb/day

### Chlorine Contact Chamber

Size: One 45' x 15' x 6' deep (27,000 gal)  
Retention: 26 min

## OUTFALL

- to Silver Creek

## SLUDGE HANDLING

### Digestion System

Type: Two-stage

Primary --

Type: Dorr draft tube mixers (3) on  
fixed steel roof  
Size: One 66' dia x 22.6' (avg) (77,800  
cu ft or 485,000 gal)  
Loading: 1.1 lb/cu ft/mo

Secondary --

Size: One 34' x 34' x 16.25' (20,700 cu  
ft or 129,000 gal)  
Total Loading: 0.87 lb/cu ft/mo

# '72 Review

## GENERAL

The Georgetown sewage project consists of a 1.5 mgd secondary water pollution control plant utilizing the conventional form of the activated sludge treatment process. Sludge is digested anaerobically and removed from the plant by tank truck for land disposal. The plant is located in a valley approximately one quarter of a mile from the nearest residential area, and on the southeast outskirts of Georgetown. Plant effluent is discharged to Silver Creek, a tributary of the Credit River.

The sewage collection system serving the Town consists of sewers and three pumping stations. One of the pumping stations is financed and operated by the Ministry of the Environment. All other system facilities are Town owned and operated. The cost of operating the Ministry pumping station is included as part of the project operating costs shown in the body of the report.

Industrial waste problems at the plant, particularly a high pH, were not as frequent nor as serious during 1972 as in previous years. High flows however continued to occur frequently, necessitating occasional bypassing of flows in excess of approximately 3.5 mgd. Further deterioration of plant efficiency and effluent quality in comparison to the previous year was a result of an increase in the average flow during 1972 and numerous peak flows well in excess of the plant's peak flow capability.

## EXPENDITURES

A total of \$65,460.91 was spent during 1972 to operating the project compared to \$55,811.89 during 1971. A total of 622 million gallons of sewage was treated. The unit cost of operation was \$105 per million gallons, a slight increase over the \$101 per million gallons cost in 1971.



### PLANT FLOWS AND CHLORINATION

Average daily flows were 1.7 mgd, up from 1.5 mgd in 1971, and exceeded the hydraulic design capacity of the plant 82 percent of the time during the year.

A total of 19,500 pounds of chlorine was used to maintain a chlorine residual of at least 0.5 mg/l in the final effluent after 15 minutes contact. During the latter months of the year, the chlorine residual was increased to 1.0 mg/l to improve the bacterial kill in the plant effluent.

### PLANT EFFICIENCY

The average raw sewage BOD was 114 mg/l, similar to 1971. The effluent BOD averaged 30 mg/l, exceeded the Ministry of the Environment objective of 15 mg/l 80 percent of the time. The average BOD removal efficiency of 74 percent is far below normal for secondary plants and results from the high flows and general hydraulic overloading experienced at this plant.

The average raw sewage suspended solids was 212 mg/l, slightly lower than in 1971. The average suspended solids in the plant effluent was 17 mg/l an improvement over 1971 and close to the Ministry objective of 15 mg/l.

Phosphorus levels entering the plant in 1972 averaged 9.1 mg/l. The plant effluent averaged 5.1 mg/l during the year. Both of these concentrations are similar to the 1971 levels. Stated in a different form, approximately 16 tons of phosphorus was discharged into Silver Creek during 1972.

### SLUDGE DIGESTION AND DISPOSAL

A report prepared by the firm of Metier Limited concerning a reliable method of sealing the digester roof to prevent gas leaks requested in 1971 was completed late in 1972 and a contractor has been retained to do the repair work. The work is scheduled for early in 1973.

Difficulties in disposing of digested sludge were not encountered during 1972. A total of 11,146 cubic yards were hauled during the year.

### CONCLUSIONS

The plant is continuing to operate at above hydraulic design capacity conditions a great deal of the time, with resulting poor quality effluent.

Expansion of plant capacity coupled with major reductions in sewer system infiltration are urgently required.

## PROJECT COSTS

2-0017-58 NET CAPITAL COST	\$871, 677.01
DEDUCT - Portion financed by CMHC/MDLB	
Municipal Advances	<u>(48, 379.33)</u>
Long Term Debt to MOE	<u>\$823, 297.68</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	<u>\$265, 345.03</u>
Net Operating	\$ 65, 491.14
Debt Retirement	5, 795.00
Reserve	3, 550.26
Interest Charged	<u>46, 169.68</u>
TOTAL	<u>\$121, 006.08</u>

### RESERVE ACCOUNT

Balance @ January 1, 1972	\$ 54, 737.92
Deposited by Municipality	3, 550.26
Interest Earned	<u>3, 595.37</u>
	\$ 61, 883.55
Less Expenditures	<u>1, 150.00</u>
Balance @ December 31, 1972	\$ <u>60, 733.55</u>

## PROJECT COSTS

2-0077-61 NET CAPITAL COST	\$63,230.31
DEDUCT - Portion financed by CMHC	<u>(19,072.10)</u>
Long Term Debt to MOE	<u>\$44,158.21</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	<u>\$11,568.13</u>
Net Operating Debt Retirement Reserve	\$ 441.00
Interest Charged	<u>2,476.35</u>
TOTAL	\$ <u>2,917.35</u>

### RESERVE ACCOUNT

Balance @ January 1, 1972	\$ 4,654.82
Deposited by Municipality	
Interest Earned	<u>305.28</u>
	\$ 4,960.10
Less Expenditures	<u>-</u>
Balance @ December 31, 1972	\$ <u>4,960.10</u>

# 1972 COSTS

## OPERATING COSTS

• PAYROLL	47 %
• FUEL	3 %
• POWER	12 %
• CHEMICALS	4 %
• GENERAL SUPPLIES	3 %
• EQUIPMENT	2 %
• REPAIRS & MAINTENANCE	6 %
• SUNDRY	22 %
• WATER	NIL %
• TRAVEL	1 %

## TOTAL ANNUAL COST

• NET OPERATING	53 %
• DEBT RETIREMENT	5 %
• RESERVE	3 %
• INTEREST	39 %

## YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	TREATMENT COSTS	
			\$ per million gal	¢ per lb BOD
1968	539.42	43,308.19	80.29	11 cents
1969	477.8	48,582.44	101.68	16 cents
1970	596.7	49,195.43	82.45	9 cents
1971	552.4	55,811.89	101.00	12 cents
1972	622. *	65,460.91	105.20	12 cents

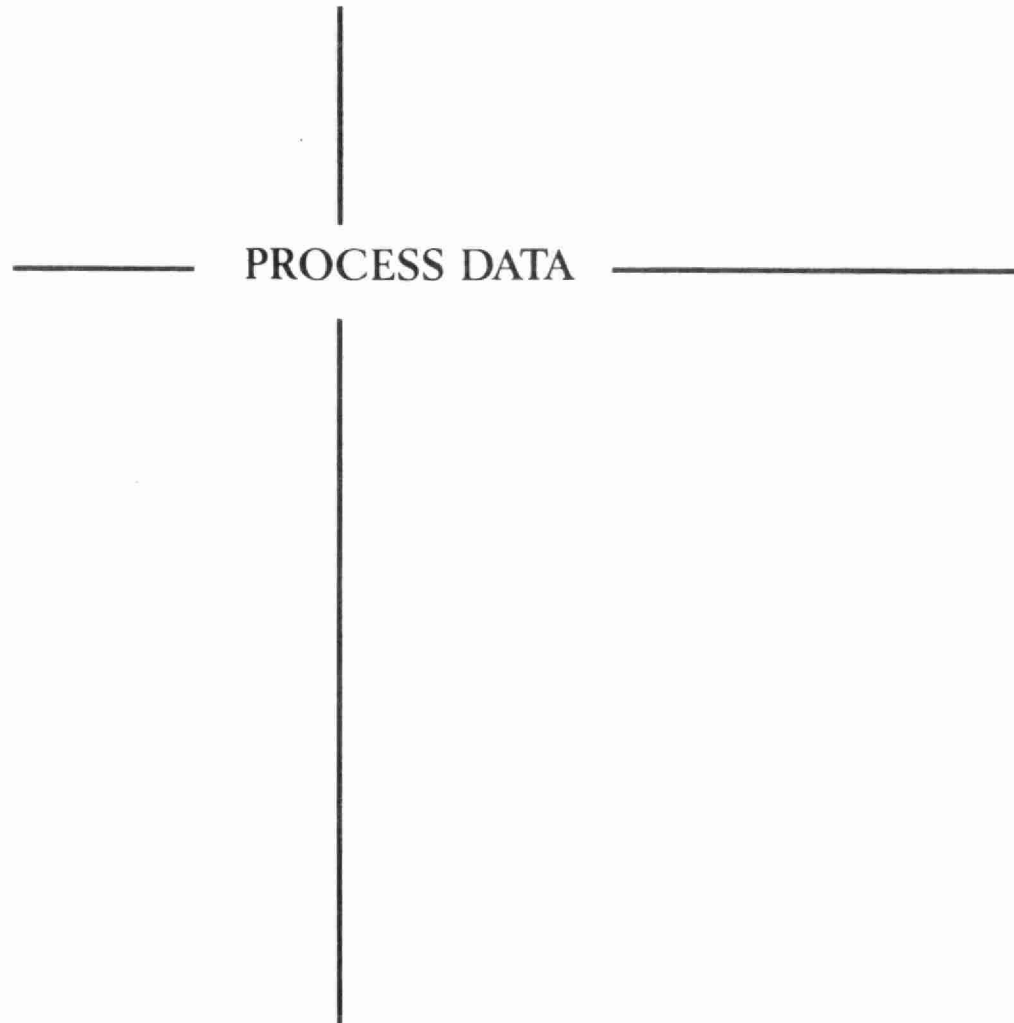
\* Estimate

## MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY*	WATER	TRAVEL
JAN	2689.28	2124.38							242.55	317.85		4.50
FEB	4238.69	2210.67		68.88	659.40	47.15	100.84		203.38	900.82		47.55
MAR	3858.85	2166.15		132.02	629.66	556.50	63.30	86.88	47.50	116.24		60.60
APR	6716.93	2332.86		65.60	1308.45	303.60	184.87			2473.10		48.45
MAY	3208.47	2288.05		384.27			135.10	270.05	52.92	26.63		51.45
JUNE	4755.65	3222.47	146.91	20.50	597.86	278.25	80.41		146.24	208.56		54.45
JULY	1430.67	52.29			529.65	390.00	245.12		95.17	46.44		72.00
AUG	4624.89	2239.84	225.90	83.02	630.80		102.30		740.44	560.59		42.00
SEPT	5557.91	2256.51	194.11	118.08	608.34	531.00	334.53		205.55	1251.89		57.90
OCT	5911.13	2531.92		467.93	660.10		66.34	151.45	188.88	1812.26		32.25
NOV	5884.16	113.01		164.94	629.69	177.00	90.92		378.12	4210.63		119.85
DEC	16584.28	8328.20	10.21	738.37	1501.26	563.86	386.14	940.80	1784.29	2205.45		125.75
TOTAL	65460.91	29866.35	577.13	2243.61	7755.21	2847.36	1789.87	1449.18	4085.04	14130.46		716.70

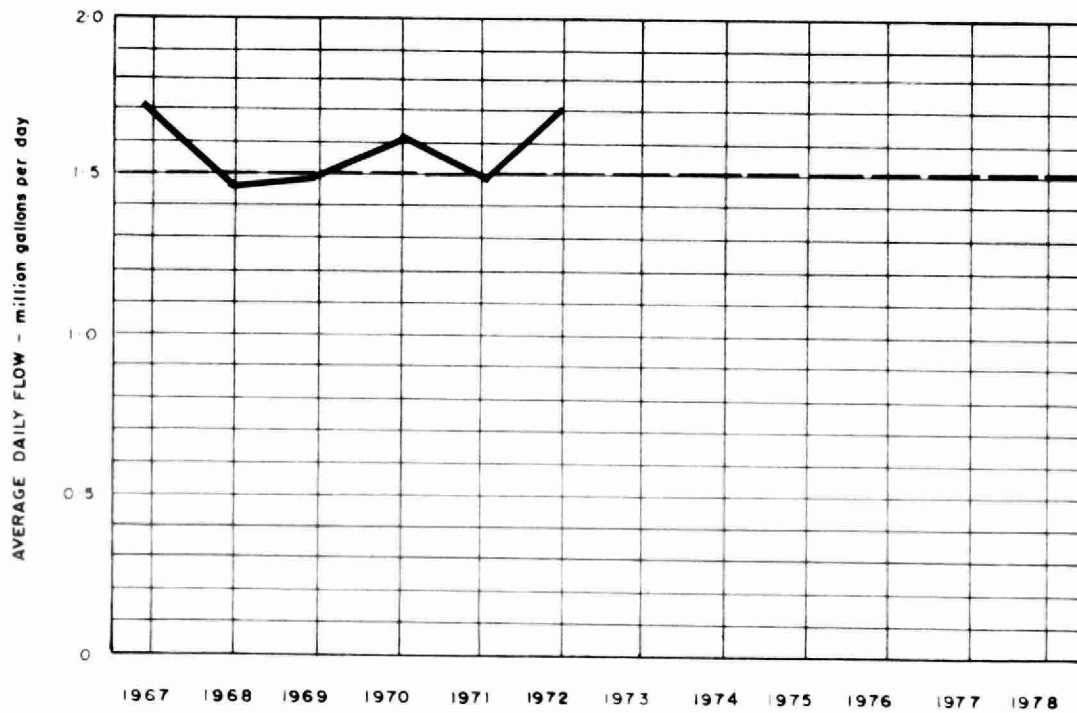
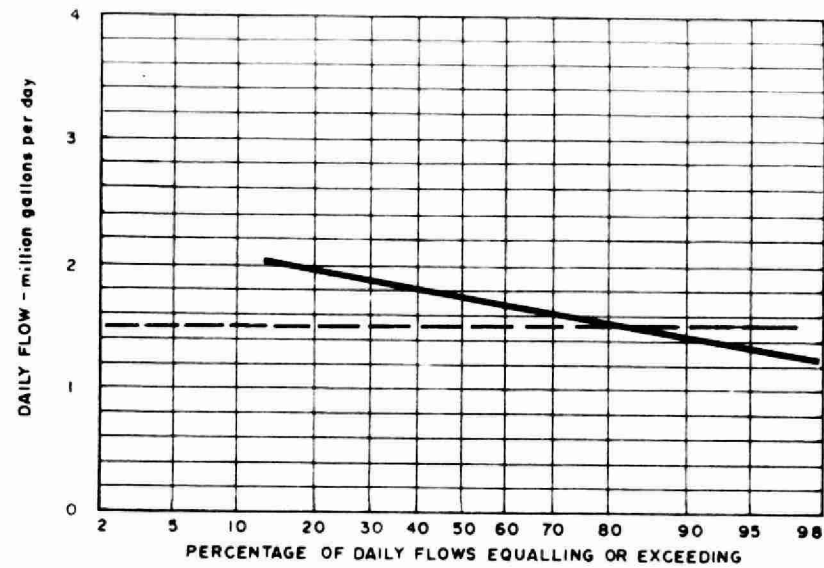
Brackets indicate credit.

\* Sundry includes sludge haulage costs of \$12,577.95



# PROCESS DATA

## FLOWS



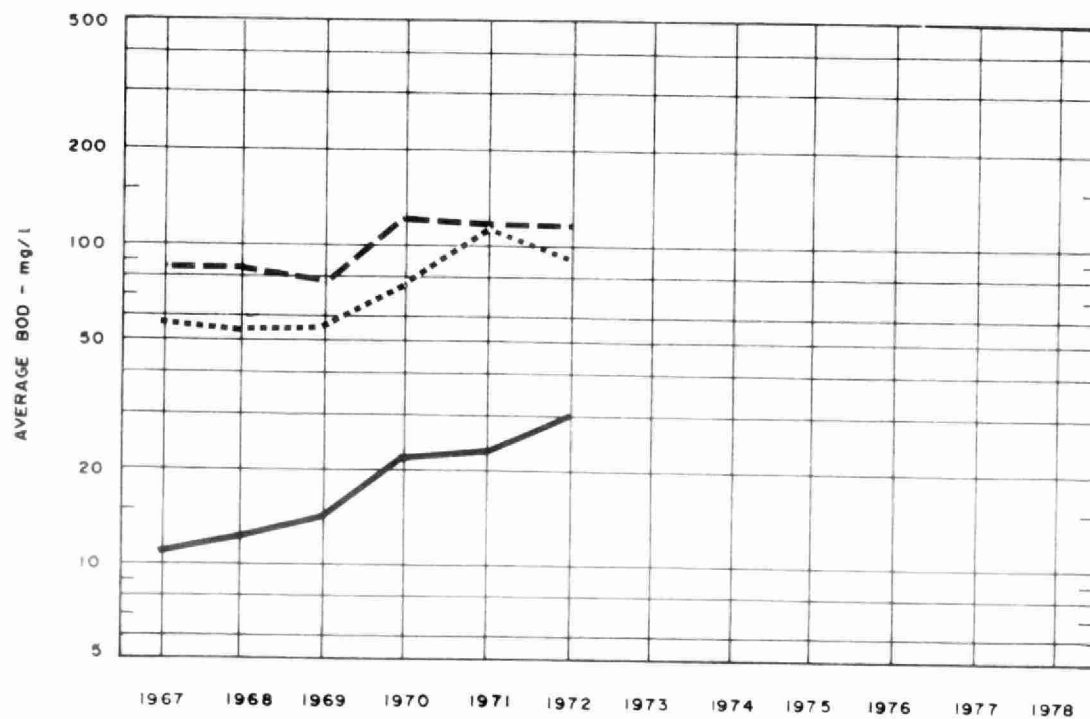
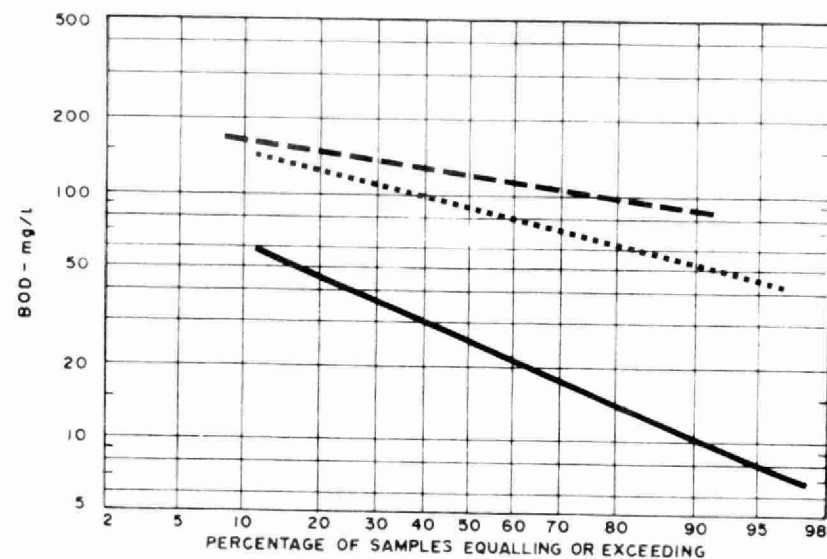
DESIGN CAPACITY \_ \_ \_ \_ \_



## PLANT PERFORMANCE

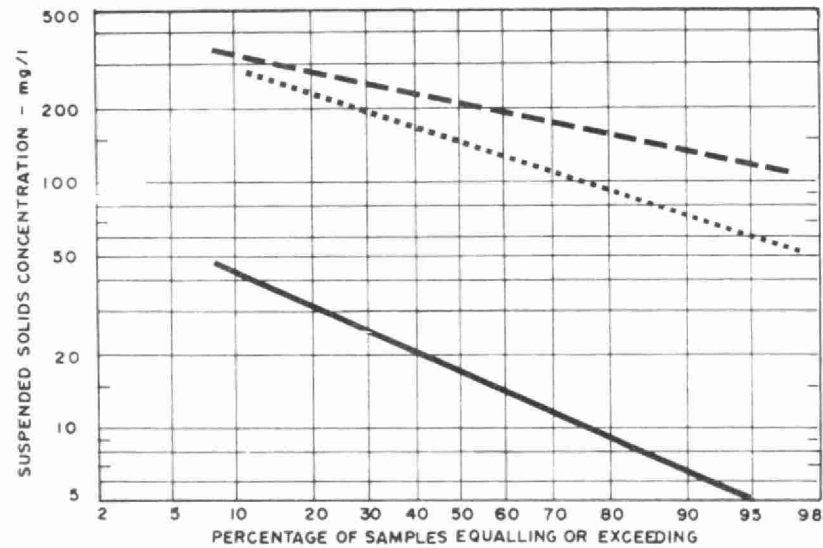
MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l P	mg/l P
JAN	43.	1.4	1.7	160	44	72	50	239	10	96	99	8.3	4.3
FEB	40.	1.4	1.8	133	49	63	33	246	11	96	93	9.8	5.5
MAR	51.	1.6	2.1	130	60	54	35	241	18	92	113	8.3	5.6
APR	60.	2.0	2.5	80	22	73	35	162	27	83	81	-	-
MAY	54.	1.7	2.1	83	10	88	39	189	14	92	94	6.6	3.6
JUNE	-	-	-	102	25	75	-	258	34	87	-	9.1	6.3
JULY	-	-	-	90	30	67	-	207	13	94	-	9.0	5.8
AUG	-	-	-	97	19	80	-	198	8	96	-	9.3	5.2
SEPT	49.	1.7	2.1	115	28	75	43	289	14	96	136	12.0	6.5
OCT	55.	1.8	2.9	170	21	88	82	177	15	92	90	7.9	3.6
NOV	55.	1.8	2.6	100	23	77	42	157	16	90	77	9.7	5.0
DEC	53.	1.7	2.6	120	32	73	47	154	19	88	72	12.0	7.2
TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-
AVG.	-	1.7	MAXIMUM 2.9	114	30	74	45	212	17	92	95	9.1	5.1
No. of Samples	-	-	-	23	22	-	-	68	63	-	-	22	21

# BIOCHEMICAL OXYGEN DEMAND

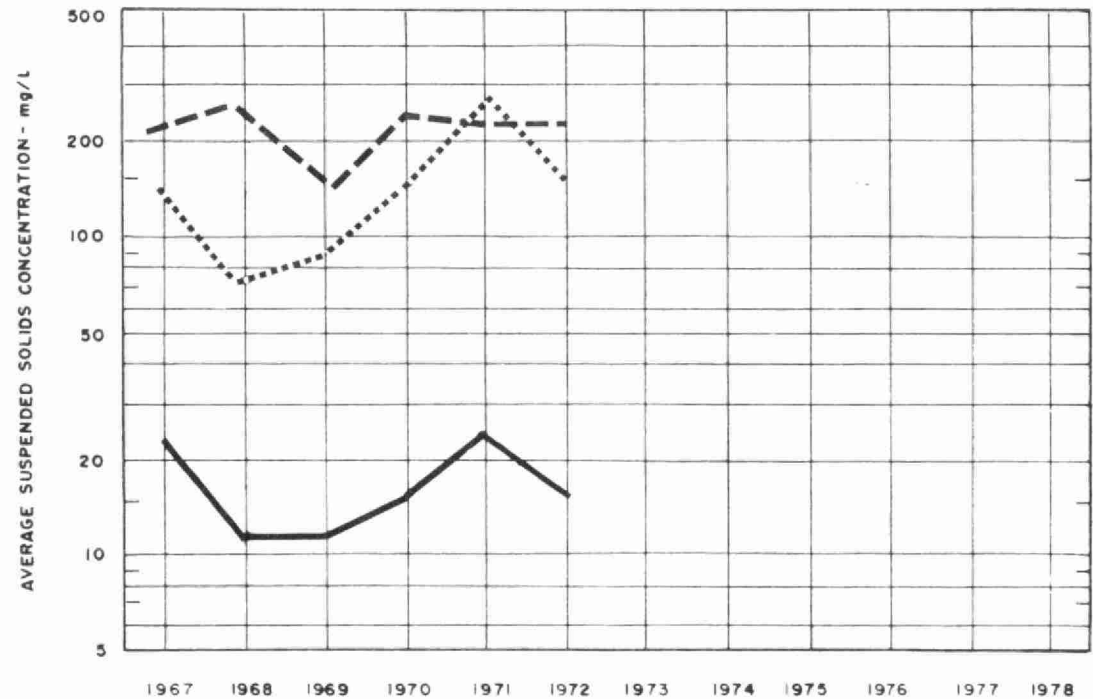


PLANT INFLUENT    - - - - -  
 PRIMARY EFFLUENT    . . . . .  
 PLANT EFFLUENT    —————

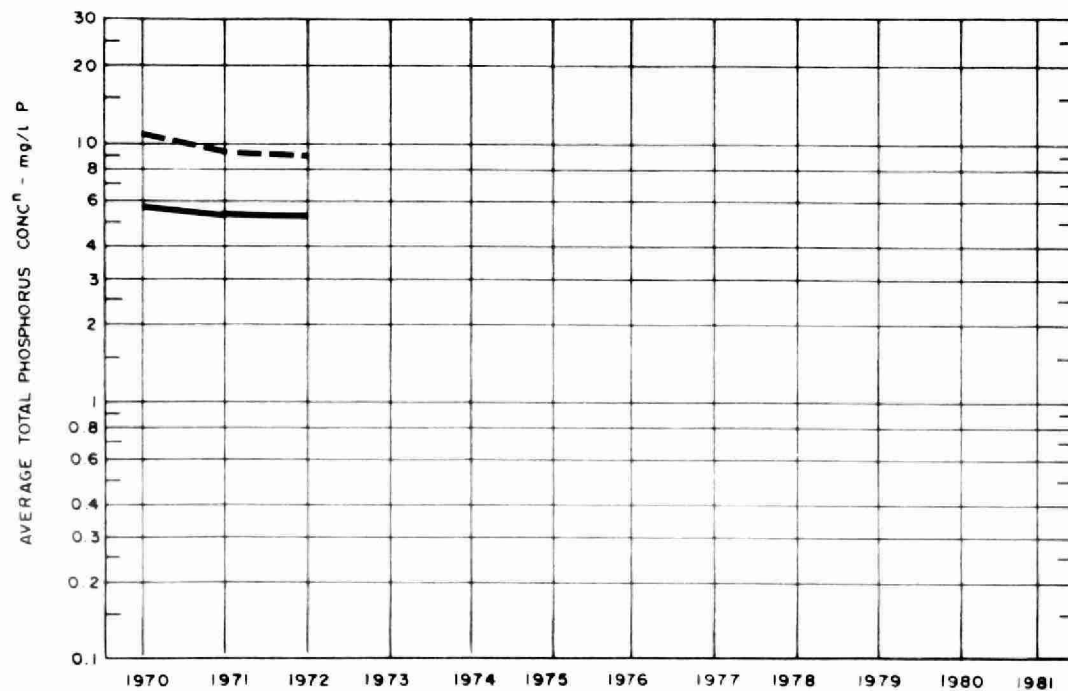
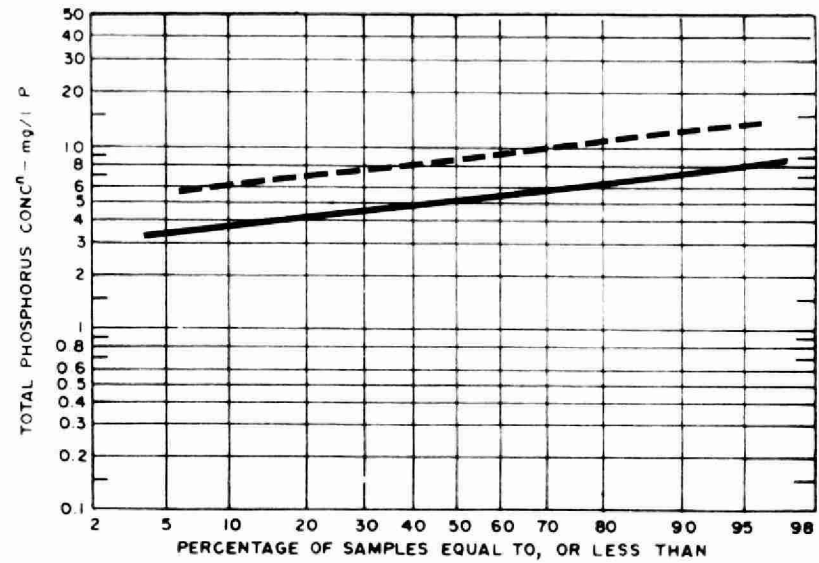
# SUSPENDED SOLIDS



PLANT INFLUENT        
 PRIMARY EFFLUENT        
 PLANT EFFLUENT      



# PHOSPHORUS



PLANT INFLUENT    - - - - -  
 PLANT EFFLUENT    —————

## TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL <sub>2</sub> USED 10 <sup>3</sup> pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day <sup>-1</sup>	AIR 1000 ft <sup>3</sup> lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	25	1.7	4.0	120	189	2400	.13		180	6.0	59					807
FEB	31	1.6	4.0	127	206	1900	.17		211	7.8	69					1369
MAR	90	1.7	3.3	125	205	2000	.20		143	6.2	63					880
APR	33	1.6	2.7	75	118	1700	.17		71	8.9	60					0
MAY	16	1.7	3.2	61	115	2100	.10		49	6.9	55					22
JUNE	29	1.6	-	65	228	2800	-		192	9.2	59					610
JULY	15	1.8	-	70	100	2000	-		175	6.3	67					719
AUG	33	1.4	-	55	117	1800	-		123	5.6	64					1289
SEPT	52	1.4	2.9	72	183	1300	.17		67	6.4	63					1453
OCT	177	1.4	2.9	102	186	1900	.18		81	5.9	57					1500
NOV	43	1.7	3.0	90	132	2200	.15		90	6.1	57					1846
DEC	73	1.9	3.6	95	141	1800	.17		37	6.3	62					651
TOTAL	617	19.5	-	-	-	-	-	-	1419	-	-	-	-	-	-	11146
AVG.	1.0 cu. ft/ml gal	1.6	3.1	88	160	2000	.14		118	6.8	61					929

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